

Analytical Data Package Prepared For
Fluor Hanford Inc.

Radiochemical Analysis By

STL Richland

2800 G.W. Way, Richland Wa, 99352, (509)-375-3131.

Assigned Laboratory Code: STLRL

Data Package Contains 28 Pages

Report No.: 28597

SDG No.	Order No.	Client Sample ID (List Order)	Lot-Sa No.	Work Order	Report DB ID	Batch No.
<u>W04597</u>	F05-009	B1CF74	J5C220162-1	G6PQG1AA	9G6PQG10	5087401
		B1CF74	J5C220162-1	G6PQG2AC	9G6PQG20	5098850



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Certificate of Analysis

Fluor Hanford
P.O. Box 1000, T6-03
Richland, WA 99352

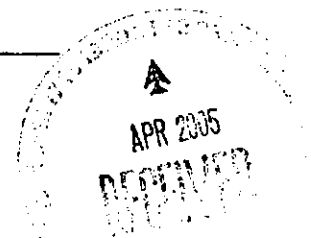
April 18, 2005

Attention: Steve Trent

STL Richland
2800 George Washington Way
Richland, WA 99354

Tel: 509 375 3131 Fax: 509 375 5590
www.stl-inc.com

SAF Number	:	F05-009
Date SDG Closed	:	March 22, 2005
Number of Samples	:	One (1)
Sample Type	:	Soil
SDG Number	:	W04597
Data Deliverable	:	7-Day / 15-Day Summary



CASE NARRATIVE

I. Introduction

On March 22, 2005, one soil sample was received at STL Richland (STLR) for radiochemical analysis. Upon receipt, the sample was assigned the following laboratory ID number to correspond with the Fluor Hanford (FH) specific ID:

<u>FH ID#</u>	<u>STLR ID#</u>	<u>MATRIX</u>	<u>DATE OF RECEIPT</u>
B1CF74	G6PQG	WATER	3/22/05

II. Sample Receipt

The samples were received in good condition and no anomalies were noted during check-in. The Total Uranium analysis was cancelled for this SAF on 3/4/05 per Steve Trent.

III. Analytical Results/Methodology

The analytical results for this report are presented by laboratory sample ID. Each set of data includes sample identification information, analytical results and the appropriate associated statistical errors.

Fluor Hanford
April 18, 2005
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The requested analysis was:

Alpha Spectroscopy
Uranium-234, -235, -238 by method RUCH-RC-5067
Liquid Scintillation Counting
Technetium-99 by method RICH-RC-5078

IV. Quality Control

The analytical results for each analysis performed under SDG W04597 includes a minimum of one laboratory control sample (LCS), one method (reagent) blank, and one duplicate sample analysis. Any exceptions have been noted in the "Comments" section.

QC and sample results are reported in the same units.

V. Comments

Alpha Spectroscopy

Uranium-234, -235, -238 by method RUCH-RC-5067:

The LCS, batch blank, sample and sample duplicate (B1CF74) results are within contractual requirements.


Liquid Scintillation Counting

Technetium-99 by method RICH-RC-5078:

The LCS and sample matrix spike recoveries were below acceptance limits; the sample was reanalyzed. The LCS, batch blank, sample, sample duplicate (B1CF74) and sample matrix spike (B1CF74) results for the reanalysis batch are within contractual requirements.

I certify that this Certificate of Analysis is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager, or a designee as verified by the following signature.

Reviewed and approved:

for 
Becky Warrington
Project Manager

Drinking Water Method Cross References

DRINKING WATER ASTM METHOD CROSS REFERENCES		
Referenced Method	Isotope(s)	STL Richland's SOP number
EPA 901.1	Cs-134, I-131	RICH-RC-5017
EPA 900.0	Alpha & Beta	RICH-RC-5014
EPA 903.1	Ra-226	RICH-RC-5005
EPA 904.0	Ra-228	RICH-RC-5005
EPA 905.0	Sr89/90	RICH-RC-5006
ASTM D2460	Total Radium	RICH-RC-5027
Standard Method 7500-U-C & ASTM D5174	Uranium	RICH-RC-5058
EPA 906.0	Tritium	RICH-RC-5007
NOTE:		
The Gross Alpha LCS is prepared with Am-241 (unless otherwise specified in the case narrative)		
The Gross Beta LCS is prepared with Sr/Y-90 (unless otherwise specified in the case narrative)		

Uncertainty Estimation

STL Richland has adopted the internationally accepted approach to estimating uncertainties described in "NIST Technical Note 1297, 1994 Edition". The approach, "Law of Propagation of Errors", involves the identification of all variables in an analytical method which are used to derive a result. These variables are related to the analytical result (R) by some functional relationship, $R = \text{constants} * f(x, y, z, \dots)$. The components (x, y, z) are evaluated to determine their contribution to the overall method uncertainty. The individual component uncertainties (u_i) are then combined using a statistical model that provides the most probable overall uncertainty value. All component uncertainties are categorized as type A, evaluated by statistical methods, or type B, evaluated by other means. Uncertainties not included in the components, such as sample homogeneity, are combined with the component uncertainty as the square root of the sum-of-the-squares of the individual uncertainties. The uncertainty associated with the derived result is the combined uncertainty (u_c) multiplied by the coverage factor (1, 2, or 3).

When three or more sample replicates are used to derive the analytical result, the type A uncertainty is the standard deviation of the mean value (S/\sqrt{n}), where S is the standard deviation of the derived results. The type B uncertainties are all other random or non-random components that are not included in the standard deviation.

The derivation of the general "Law of Propagation of Errors" equations and specific example are available on request.

Report Definitions

Action Lev	An agreed upon activity level used to trigger some action when the final result is greater than or equal to the Action Level. Often the Action Level is related to the Decision Limit.
Batch	The QC preparation batch number that relates laboratory samples to QC samples that were prepared and analyzed together.
Bias	Defined by the equation $(\text{Result}/\text{Expected}) - 1$ as defined by ANSI N13.30.
COC No	Chain of Custody Number assigned by the Client or STL Richland.
Count Error (#s)	Poisson counting statistics of the gross sample count and background. The uncertainty is absolute and in the same units as the result. For Liquid Scintillation Counting (LSC) the batch blank count is the background.
Total Uncert (#s) u_c - Combined Uncertainty.	All known uncertainties associated with the preparation and analysis of the sample are propagated to give a measure of the uncertainty associated with the result, u_c the combined uncertainty. The uncertainty is absolute and in the same units as the result.
(#s), Coverage Factor	The coverage factor defines the width of the confidence interval, 1, 2 or 3 standard deviations.
CRDL (RL)	Contractual Required Detection Limit as defined in the Client's Statement Of Work or STL Richland "default" nominal detection limit. Often referred to the reporting level (RL)
Lc	Decision Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume associated with the sample. The Type I error probability is approximately 5%. $Lc = (1.645 * \text{Sqrt}(2 * (\text{BkgndCnt}/\text{BkgndCntMin}/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct})$. For LSC methods the batch blank is used as a measure of the background variability. Lc cannot be calculated when the background count is zero.
Lot-Sample No	The number assigned by the LIMS software to track samples received on the same day for a given client. The sample number is a sequential number assigned to each sample in the Lot.
MDC MDA	Detection Level based on instrument background or blank, adjusted by the Efficiency, Chemical Yield, and Volume with a Type I and II error probability of approximately 5%. $MDC = (4.65 * \text{Sqrt}((\text{BkgndCnt}/\text{BkgndCntMin}/\text{SCntMin}) + 2.71/\text{SCntMin})) * (\text{ConvFct}/(\text{Eff} * \text{Yld} * \text{Abn} * \text{Vol})) * \text{IngrFct}$. For LSC methods the batch blank is used as a measure of the background variability.
Primary Detector	The instrument identifier associated with the analysis of the sample aliquot.
Ratio U-234/U-238	The U-234 result divided by the U-238 result. The U-234/U-238 ratio for natural uranium in NIST SRM 4321C is 1.038.
Rst/MDC	Ratio of the Result to the MDC. A value greater than 1 may indicate activity above background at a high level of confidence. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Rst/TotUcert	Ratio of the Result to the Total Uncertainty. If the uncertainty has a coverage factor of 2 a value greater than 1 may indicate activity above background at approximately the 95% level of confidence assuming a two-sided confidence interval. Caution should be used when applying this factor and it should be used in concert with the qualifiers associated with the result.
Report DB No	Sample Identifier used by the report system. The number is based upon the first five digits of the Work Order Number.
RER	The equation Replicate Error Ratio = $(S - D) / [\text{sqrt}(\text{TPUs}^2 + \text{TPUd}^2)]$ as defined by ICPT BOA where S is the original sample result, D is the result of the duplicate, TPUs is the total uncertainty of the original sample and TPUd is the total uncertainty of the duplicate sample.
SDG	Sample Delivery Group Number assigned by the Client or assigned by STL Richland upon sample receipt.
Sum Rpt Alpha Spec Rst(s)	The sum of the reported alpha spec results for tests derived from the same sample excluding duplicate result where the results are in the same units.
Work Order	The LIMS software assign test specific identifier.
Yield	The recovery of the tracer added to the sample such as Pu-242 used to trace a Pu-239/40 method.

Sample Results Summary

Date: 18-Apr-05

STL Richland STLRL

Ordered by Method, Batch No., Client Sample ID.

Report No. : 28597

SDG No: W04597

Client Id	Batch	Work Order	Parameter	Result ± Uncertainty (2σ)	Qual	Units	Yield	MDC or MDA	CRDL	RPD
5087401 UI80_IE_PLATE_AEA										
B1CF74										
	G6PQG1AA	U-234		1.31E+01 ± 2.38E+00		pCi/g	74%	3.41E-02	1.00E+00	
		U-235		5.95E-01 ± 1.45E-01		pCi/g	74%	2.62E-02	1.00E+00	
		U-238		1.39E+01 ± 2.49E+00		pCi/g	74%	3.41E-02	1.00E+00	
B1CF74 DUP										
	G6PQG1AD	U-234		1.23E+01 ± 2.19E+00		pCi/g	81%	2.60E-02	1.00E+00	8.8
		U-235		4.38E-01 ± 1.12E-01		pCi/g	81%	2.14E-02	1.00E+00	30.4
		U-238		1.25E+01 ± 2.23E+00		pCi/g	81%	3.26E-02	1.00E+00	10.4
5098850 TC99_ETVDSK_LSC										
B1CF74										
	G6PQG2AC	TC-99		-3.39E-02 ± 3.57E-01	U	pCi/g	100%	8.15E-01	1.50E+01	
B1CF74 DUP										
	G6PQG1AH	TC-99		2.29E-01 ± 3.70E-01	U	pCi/g	100%	8.14E-01	1.50E+01	269.5
No. of Results: 8										

STL Richland

rptSTLRchSaSummary2 V4.12 A87

RPD - Relative Percent Difference.

U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

QC Results Summary

Date: 18-Apr-05

STL Richland STLRL

Ordered by Method, Batch No, QC Type,.

Report No. : 28597

SDG No.: W04597

Batch	Work Order	Parameter	Result +/- Uncertainty (2s)	Qual	Units	Yield	Recovery	Bias	MDC MDA
UIISO_IE_PLATE_AEA									
5087401 BLANK QC									
	G66QK1AA	U-234	1.80E-02 +/- 1.70E-02	U	pCi/g	95%			2.42E-02
		U-235	6.20E-04 +/- 6.68E-03	U	pCi/g	95%			2.13E-02
		U-238	3.10E-03 +/- 1.14E-02	U	pCi/g	95%			2.88E-02
5087401 LCS									
	G66QK1AC	U-234	1.88E+00 +/- 3.57E-01		pCi/g	90%	113%	0.1	2.48E-02
		U-238	1.78E+00 +/- 3.44E-01		pCi/g	90%	103%	0.0	3.63E-02
TC99_ETVDSK_LSC									
5098850 MATRIX SPIKE									
	G6PQG1AG	TC-99	1.88E+02 +/- 1.10E+01		pCi/g	100%	82%	-0.2	6.53E-01
5098850 BLANK QC									
	G73CQ1AA	TC-99	2.09E-01 +/- 3.69E-01	U	pCi/g	100%			6.15E-01
5098850 LCS									
	G73CQ1AC	TC-99	1.62E+02 +/- 9.60E+00		pCi/g	100%	72%	-0.3	6.47E-01
No. of Results: 8									

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.34.

rptSTLRchQcSummary V4.12 AS7 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM I
SAMPLE RESULTS

Date: 18-Apr-05

Lab Name: STL Richland

SDG: W04597

Collection Date: 3/15/2005 10:15:00 AM

Lot-Sample No.: J5C220162-1

Report No.: 28597

Received Date: 3/22/2005 8:30:00 AM

Client Sample ID: B1CF74

COC No.: F05-009-088

Matrix: SOIL

Ordered by Client Sample ID, Batch No.

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC MDA, Action Lev	Rpt Unit, Lc	Yield CRDL(RL)	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5087401	UISO_IE_PLATE_AEA			Work Order: G6PQG1AA				Report DB ID: 9G6PQG10				
U-234	1.31E+01		4.66E-01	2.36E+00	3.41E-02	pCi/g	74%	(384.4)	4/7/05 06:58 p		2.0	ALP1
							1.14E-02	1.00E+00	(11.1)		G	
U-235	5.95E-01		9.96E-02	1.45E-01	2.62E-02	pCi/g	74%	(22.7)	4/7/05 06:58 p		2.0	ALP1
							7.48E-03	1.00E+00	(8.2)		G	
U-238	1.38E+01		4.80E-01	2.49E+00	3.41E-02	pCi/g	74%	(407.)	4/7/05 06:58 p		2.0	ALP1
							1.14E-02	1.00E+00	(11.1)		G	
Ratio U-234/238 = 0.9												
Batch: 5098650	TC99_ETVDSK_LSC			Work Order: G8PQG2AC				Report DB ID: 8G6PQG20				
TC-99	-3.39E-02 U		2.53E-01	3.57E-01	6.15E-01	pCi/g	100%	-0.06	4/16/05 10:00 a		2.1	LSC4
							2.96E-01	1.50E+01	-0.19		G	

No. of Results: 4 Comments:

STL Richland MDC|MDA,Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRchSample U Qual - Analyzed for, but the result is less than the Mdc/Mda|Total Uncert or gamma scan software did not identify the nuclide.
V4.12 A97

FORM II

Date: 18-Apr-05

DUPLICATE RESULTS

Lab Name: STL Richland

SDG: W04597

Collection Date: 3/15/2005 10:15:00 AM

Lot-Sample No.: J5C220162-1

Report No.: 28597

Received Date: 3/22/2005 8:30:00 AM

Client Sample ID: B1CF74 DUP

COC No.: F05-009-088

Matrix: SOIL

Parameter	Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA, Action Lev	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotalUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5087401	UI50_IE_PLATE_AEA				Work Order: G6PQG1AD	Report DB ID: G6PQG1DR			Orig Sa DB ID: 9G6PQG10			
U-234	1.23E+01		4.31E-01	2.19E+00	2.60E-02	pCi/g	81%	(471.2)	4/7/05 06:58 p		2.04	ALP2
	1.31E+01		RPD 6.6			1.00E+00		(11.2)			G	
U-235	4.38E-01		8.18E-02	1.12E-01	2.14E-02	pCi/g	81%	(20.5)	4/7/05 06:58 p		2.04	ALP2
	5.95E-01		RPD 30.4			1.00E+00		(7.8)			G	
U-238	1.25E+01		4.35E-01	2.23E+00	3.26E-02	pCi/g	81%	(384.)	4/7/05 06:58 p		2.04	ALP2
	1.39E+01		RPD 10.4			1.00E+00		(11.2)			G	
Ratio U-234/238 = 1.0								Alpha Spec Result Sum = 2.5E+01				
Batch: 5098850	TC99_ETVDSK_LSC				Work Order: G6PQG1AH	Report DB ID: G6PQG1HR			Orig Sa DB ID: 9G6PQG20			
TC-99	2.29E-01	U	2.62E-01	3.70E-01	6.14E-01	pCi/g	100%	0.37	4/16/05 08:57 a		2.1	LSC4
	-3.38E-02	U	RPD 269.5			1.50E+01		(1.2)			G	
								Alpha Spec Result Sum = 2.5E+01				

No. of Results: 4 Comments:

STL Richland RPD - Relative Percent Difference.

rptSTLRchDupV4.1 MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.

2 A97 U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.

FORM II
BLANK RESULTS

Date: 18-Apr-05

Lab Name: STL Richland
Matrix: SOIL

SDG: W04597
Report No.: 28597

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA ,	Rpt Unit, CRDL	Yield	Rst/MDC, Rst/TotUncert	Analysis, Prep Date	Total Sa Size	Aliquot Size	Primary Detector
Batch: 5087401 UIISO_JE_PLATE_AEA Work Order: G68QK1AA Report DB ID: G68QK1AB												
U-234	1.80E-02	U	1.67E-02	1.70E-02	2.42E-02	pCi/g	95%	0.74	4/7/05 06:58 p		2.0	ALP3
					7.90E-03	1.00E+00		(2.1)			G	
U-235	6.20E-04	U	6.67E-03	6.68E-03	2.13E-02	pCi/g	95%	0.03	4/7/05 06:58 p		2.0	ALP3
					6.45E-03	1.00E+00		0.19			G	
U-238	3.10E-03	U	1.14E-02	1.14E-02	2.88E-02	pCi/g	95%	0.11	4/7/05 06:58 p		2.0	ALP3
					1.02E-02	1.00E+00		0.54			G	
Ratio U-234/238 = 5.8												
Batch: 5098650 TC99_ETVDSK_LSC Work Order: G73CQ1AA Report DB ID: G73CQ1AB												
TC-99	2.09E-01	U	2.61E-01	3.69E-01	6.15E-01	pCi/g	100%	0.34	4/18/05 11:02 a		2.1	LSC4
					2.95E-01	2.00E+01		(1.1)			G	
No. of Results: 4 Comments:												

STL Richland MDC/MDA, Lc - Detection, Decision Level based on instrument background or blank, adjusted by the sample Efficiency, Yield, and Volume.
rptSTLRchBlank U Qual - Analyzed for, but the result is less than the Mdc/Mda/Total Uncert or gamma scan software did not identify the nuclide.
V4.12 A97

FORM II
LCS RESULTS

Date: 18-Apr-05

Lab Name: STL Richland

SDG: W04597

Matrix: SOIL

Report No.: 28597

Parameter	Result	Qual	Count Error (2 s)	Total Uncert(2 s)	MDC/MDA	Report Unit	Yield	Expected	Expected Uncert	Recovery, Bias	Analysis, Prep Date	Alliquot Size	Primary Detector
Batch: 5087401	UIISO_IE_PLATE_AEA					Work Order: G66QK1AC		Report DB ID: G66QK1CS					
U-234	1.86E+00		1.58E-01	3.57E-01	2.48E-02	pCi/g	90%	1.64E+00	1.01E-02	113%	4/7/05 06:58 p	2.0	ALP4
							Rec Limits:	20	105	0.1		G	
U-238	1.78E+00		1.55E-01	3.44E-01	3.63E-02	pCi/g	90%	1.72E+00	1.05E-02	103%	4/7/05 06:58 p	2.0	ALP4
							Rec Limits:	20	105	0.0		G	
Batch: 5090650	TC99_ETVDSK_LSC					Work Order: G73CQ1AC		Report DB ID: G73CQ1CS					
TC-99	1.62E+02		1.75E+00	9.60E+00	6.47E-01	pCi/g	100%	2.25E+02	2.86E+00	72%	4/16/05 12:04 p	2.0	LSC4
							Rec Limits:	70	130	-0.3		G	
No. of Results: 3 Comments:													

STL Richland Bias - (Result/Expected)-1 as defined by ANSI N13.36.
rptSTLRichLcs
V4.12 A97

FORM II
MATRIX SPIKE RESULTS

Date: 18-Apr-05

Lab Name: STL Richland

SDG: W04597

Lot-Sample No.: J5C220162-1

Report No.: 28597

Matrix: SOIL

Parameter	Spike Result, Orig Rst	Qual	Count Error (2 s)	Total Uncert (2 s)	MDC/MDA	Rpt Unit, CRDL	Yield	Rec- overy	Exp- ected	Exp Uncert	Analysis, Prep Date	Aliquot Size	Primary Detector
Batch: 5098650	TC99_ETVDSK_LSC				Work Order: G6PQG1AG	Report DB ID: G6PQG1GW				Orig Sa DB ID: 9G6PQG20			
TC-99	1.88E+02		1.88E+00	1.10E+01	8.53E-01	pCi/g	100%	82.13%	2.28E+02	1.89E+01	4/16/05 07:55 a	2.0	LSC4
	-3.39E-02	RPD	34.0									G	

No. of Results: 1 Comments:

STL Richland RER - Replicate Error Ratio = $(S-D)/[\sqrt{(sq(TPUs)+sq(TPUD))}]$ as defined by ICPT BOA.
rptSTLRchMs Bias - (Result/Expected)-1 as defined by ANSI N13.30.
V4.12 A97

**STL****Data Review/Verification Checklist**
RADIOCHEMISTRY, First Level Review

4/8/2005 4:45:26 PM

Lot No., Due Date: J5C220162; 04/01/2005
Client, Site: 108302; FLUOR- SOILS Hanford Site
QC Batch No., Method Test: 5087401; RUIO Also by ALP
SDG, Matrix: W04597; SOIL

	Yes	No	N/A
1.0 QC			
1.1 Is the ICOC page complete; Includes all applicable analysis, dates, SOP numbers, and revisions?	<input checked="" type="checkbox"/>		
2.0 QC Batch			
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet?	<input checked="" type="checkbox"/>		
2.2 Are the QC appropriate for the analysis included in the batch?	<input checked="" type="checkbox"/>		
2.3 Is the Analytical Batch Worksheet complete; Includes as appropriate, volumes, count times, etc?	<input checked="" type="checkbox"/>		
2.4 Does the Worksheets include a Tracer Vial label for each sample?	<input checked="" type="checkbox"/>		
3.0 QA Samples			
3.1 Is the blank results, yield, and MDA within contract limits?	<input checked="" type="checkbox"/>		
3.2 Is the LCS result, yield, and MDA within contract limits?	<input checked="" type="checkbox"/>		
3.3 Are the MS/MSD results, yields, and MDA within contract limits?	<input checked="" type="checkbox"/>		
3.4 Are the duplicate result, yields, and MDAs within contract limits?	<input checked="" type="checkbox"/>		
3.5 Are the sample yields and MDAs within contract limits?	<input checked="" type="checkbox"/>		
4.0 Raw Data			
4.1 Were results calculated in the correct units?	<input checked="" type="checkbox"/>		
4.2 Were analysis volumes entered correctly?	<input checked="" type="checkbox"/>		
4.3 Were Yields entered correctly?	<input checked="" type="checkbox"/>		
4.4 Were spectra reviewed/meet contractual requirements?	<input checked="" type="checkbox"/>		
4.5 Were raw counts reviewed for anomalies?	<input checked="" type="checkbox"/>		
5.0 Other			
5.1 Are all nonconformances included and noted?	<input checked="" type="checkbox"/>		
5.2 Are all required forms filled out?	<input checked="" type="checkbox"/>		
5.3 Was the correct methodology used?	<input checked="" type="checkbox"/>		
5.4 Was transcription checked?	<input checked="" type="checkbox"/>		
5.5 Were all calculations checked at a minimum frequency?	<input checked="" type="checkbox"/>		
5.6 Are worksheet entries complete and correct?	<input checked="" type="checkbox"/>		
6.0 Comments on any No response:			

First Level Review

Pam Anderson

Date 4.8.05



STL

Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 5087401

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?	✓		
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?	✓		
3. Are the correct isotopes reported?	✓		
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?	✓		
2. Does the blank result meet the Contract criteria?	✓		
3. Is the blank result < the Contract Detection Limit?	✓		
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?	✓		
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?	✓		
8. Do the MS/MSD results and yields meet acceptance criteria?			✓
9. Do the duplicate sample results and yields meet acceptance criteria?	✓		
C. Other			
1. Are all Nonconformances included and noted?			✓
2. Are all required forms filled out?	✓		
3. Was the correct methodology used?	✓		
4. Was transcription checked?	✓		
5. Were all calculations checked at a minimum frequency?	✓		
6. Were units checked?	✓		

Comments on any "No" response: _____

Second Level Review: _____

Jacqui Waddell

Date: _____

4/8/05

**STL****Data Review/Verification Checklist**
RADIOCHEMISTRY, First Level Review

4/18/2005 12:15:52 PM

Lot No., Due Date: J5C220162; 04/01/2005
Client, Site: 108302; FLUOR- SOILS Hanford Site
QC Batch No., Method Test: 5098650; RTC99 Tc-99 by LSC
SDG, Matrix: W04597; SOIL

1.0 ICOC
1.1 Is the ICOC page complete; includes all applicable analysis, dates, SOP numbers, and revisions? ☒ Yes ☐ No ☐ N/A

2.0 QC Batch
2.1 Do the Summary/Detailed Reports include a calculated result for each sample listed on the QC Batch Sheet? ☒ Yes ☐ No ☐ N/A

2.2 Are the QC appropriate for the analysis included in the batch? ☒ Yes ☐ No ☐ N/A

2.3 Is the Analytical Batch Worksheet complete; includes as appropriate, volumes, count times, etc? ☒ Yes ☐ No ☐ N/A

2.4 Does the Worksheets include a Tracer Vial label for each sample? ☒ Yes ☐ No ☒ N/A

3.0 QC Samples
3.1 Is the blank results, yield, and MDA within contract limits? ☒ Yes ☐ No ☐ N/A

3.2 Is the LCS result, yield, and MDA within contract limits? ☒ Yes ☐ No ☐ N/A

3.3 Are the MS/MSD results, yields, and MDA within contract limits? ☒ Yes ☐ No ☐ N/A

3.4 Are the duplicate result, yields, and MDAs within contract limits? ☒ Yes ☐ No ☐ N/A

3.5 Are the sample yields and MDAs within contract limits? ☒ Yes ☐ No ☐ N/A

4.0 Raw Data
4.1 Were results calculated in the correct units? ☒ Yes ☐ No ☐ N/A

4.2 Were analysis volumes entered correctly? ☒ Yes ☐ No ☐ N/A

4.3 Were Yields entered correctly? ☒ Yes ☐ No ☐ N/A

4.4 Were spectra reviewed/meet contractual requirements? ☒ Yes ☐ No ☐ N/A

4.5 Were raw counts reviewed for anomalies? ☒ Yes ☐ No ☐ N/A

5.0 Other
5.1 Are all nonconformances included and noted? ☒ Yes ☐ No ☐ N/A

5.2 Are all required forms filled out? ☒ Yes ☐ No ☐ N/A

5.3 Was the correct methodology used? ☒ Yes ☐ No ☐ N/A

5.4 Was transcription checked? ☒ Yes ☐ No ☐ N/A

5.5 Were all calculations checked at a minimum frequency? ☒ Yes ☐ No ☐ N/A

5.6 Are worksheet entries complete and correct? ☒ Yes ☐ No ☐ N/A

6.0 Comments on any No response:

The batch was rerun when the LCS and matrix spike were low. Rerun is good.

10 05558

First Level Review

Pam Anderson

Date

4-18-05

STL Richland

OAS_RADCALCv4.8.09

Page 1



Data Review Checklist
RADIOCHEMISTRY
Second Level Review

QC Batch Number: 509 8650

Review Item	Yes (✓)	No (✓)	N/A (✓)
A. Sample Analysis			
1. Are the sample yields within acceptance criteria?			✓
2. Is the sample Minimum Detectable Activity < the Contract Detection Limit?		✓	
3. Are the correct isotopes reported?		✓	
B. QC Samples			
1. Is the Minimum Detectable Activity for the blank result ≤ the Contract Detection Limit?		✓	
2. Does the blank result meet the Contract criteria?		✓	
3. Is the blank result < the Contract Detection Limit?		✓	
4. Is the blank result > the Contract Detection Limit but the sample result < the Contract Detection Limit?			✓
5. Is the LCS recovery with contract acceptance criteria?		✓	
7. Is the LCS Minimum Detectable Activity ≤ the Contract Detection Limit?		✓	
8. Do the MS/MSD results and yields meet acceptance criteria?		✓	✓ 4/18/05
9. Do the duplicate sample results and yields meet acceptance criteria?		✓	
C. Other			
1. Are all Nonconformances included and noted?		✓	
2. Are all required forms filled out?		✓	
3. Was the correct methodology used?		✓	
4. Was transcription checked?		✓	
5. Were all calculations checked at a minimum frequency?		✓	
6. Were units checked?		✓	

Comments on any "No" response: _____

Second Level Review: _____

Date: 4/18/05



STL

*** RE-ANALYSIS REQUEST ***

DUE DATE 4-1-04

CUSTOMER FLH

ANALYSIS Ve

MATRIX Soil

LOT NUMBER J50226142

SAMPLE DELIVERY GROUP N/A

OLD BATCH NUMBER 508742

NEW BATCH NUMBER 5098650

LAB SAMPLE ID	REASON FOR REQUEST & ANALYSIS COMMENTS
1)	Low spike recovery
2)	
3)	
4)	
5)	
6)	
7)	
8)	
9)	
10)	
11)	
12)	
13)	
14)	
15)	
16)	
17)	
18)	
19)	
20)	
LAB QC ID	Assigned with new batch.

Clouseau Nonconformance Memo



NCM #: 10-05550	Classification: Anomaly
NCM Initiated By: Pam Anderson	Status: GLREVIEW
Date Opened: 04/18/2005	Production Area: Environmental - Sep
Date Closed:	Tests: Tc-99 by LSC
	Lot #'s (Sample #'s): J5C220162 (1), J5D080000 (650),
	QC Batches: 5098650
Nonconformance: LCS result out of limits	
Subcategory: Analyte was recovered low in the LCS	

Problem Description / Root Cause

Name	Date	Description
Pam Anderson	04/18/2005	The batch was rerun when the LCSD and matrix spike were low. Rerun batch has good recoveries. Data accepted.

Corrective Action

Name	Date	Corrective Action
Pam Anderson	04/18/2005	Will watch for a trend.

Client Notification Summary

Client	Project Manager	Notified	Response	How Notified	Note
			<u>Response</u>		<u>Response Note</u>

Quality Assurance Verification

Verified By	Due Date	Status	Notes
		This section not yet completed by QA.	

Approval History

Date Approved	Approved By	Position
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[illegible]

WSCF

ANALYTICAL RESULTS REPORT

Attention: Steve Trent
Project: R05-009: F05-009

Group #: WSCF20050590

Sample / Client ID	CAS #	Test Performed	Matrix	WSCF Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
Radiochemistry										
W050001000 B1CF81	12587-48-1	Gross alpha	SOIL	LA-508-421		18.8	pCi/g	1.00	1.2	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Alpha error by LC	SOIL	LA-508-421		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	12587-47-2	Gross beta	SOIL	LA-508-421		71.0	pCi/g	1.00	1.4	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Beta error by LC	SOIL	LA-508-421		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	14586-10-2	Americium-241	SOIL	LA-508-481	U	-1.06	pCi/g	1.00	1.1	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Am-241 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	14724-26-8	Americium-125	SOIL	LA-508-481	U	0.0601	pCi/g	1.00	0.41	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Am-125 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	12587-41-4	Be-123 by GEA	SOIL	LA-508-481	U	0.200	pCi/g	1.00	0.22	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Be-123 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	14782-78-8	Caesium-144	SOIL	LA-508-481	U	-0.170	pCi/g	1.00	1.2	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Ca-144 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	CEPR-144	Caesium-144	SOIL	LA-508-481	U	-0.340	pCi/g	1.00	2.3	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Ca-144 Rel. Count Error	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	10196-40-0	Cobalt-60	SOIL	LA-508-481	U	-8.14e-03	pCi/g	1.00	0.16	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Co-60 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	13567-70-9	Caesium-134	SOIL	LA-508-481	U	0.0848	pCi/g	1.00	0.16	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Ca-134 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	10045-87-3	Caesium-137	SOIL	LA-508-481		5.06	pCi/g	1.00	0.15	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Cs-137 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	14683-23-9	Europium-152	SOIL	LA-508-481	U	-0.806	pCi/g	1.00	0.44	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Eu-152 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	15586-10-1	Europium-154	SOIL	LA-508-481	U	-0.0720	pCi/g	1.00	0.46	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Eu-154 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	14381-16-3	Europium-185	SOIL	LA-508-481	U	-0.0723	pCi/g	1.00	0.84	03/18/05 03/18/05 03/18/05
W050001000 B1CF81	E.T.C	Eu-185 Rel. Count Error (GEA)	SOIL	LA-508-481		+	pCi/g	1.00	0.0	03/18/05 03/18/05 03/18/05

U - Analyzed for but not discussed above finding criteria.

MDL = Minimum Detection Limit

RQ = Result Qualifier

U - Analyzed for but not detected above reporting criteria.

MDL = Minimum Detection Limit
RQ = Result Qualifier

DF = Dilution Factor

+ - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WQCP/Ver. 1.1

Groundwater Remediation Program

WSCF ANALYTICAL RESULTS REPORT

Sample #	Client ID	Stieve Treat	CAS #	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Group #:	WSCF	Analyte Sample Receive
W050001000	81CF81	TRENT	13604-00-2	Potassium-40	SOIL	LA-508-481		17.7	pCi/g	1.00	1.3	WSCF20050590		03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	K-40 Rel. % Count Error (GEA)	SOIL	LA-508-481		+- 3.1	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	14681-03-1	Mercurium-94	SOIL	LA-508-481	U	-1.87e-04	pCi/g	1.00	0.14			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Mo-94 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 1.9e-03	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	13603-43-3	Radium-226	SOIL	LA-508-481		0.810	pCi/g	1.00	0.30			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Pb-210 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.37	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	15283-20-1	Radium-226	SOIL	LA-508-481		0.580	pCi/g	1.00	0.44			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Pb-210 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.42	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	13603-48-1	Radium-226	SOIL	LA-508-481	U	-0.328	pCi/g	1.00	1.3			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Pb-210 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.74	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	19832-80-8	Th-128	SOIL	LA-508-481	U	0.0465	pCi/g	1.00	0.52			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Se-128 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.36	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	16085-10-8	Thulium-134	SOIL	LA-508-481	U	7.46	pCi/g	1.00	8.8			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Th-234 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 4.4	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	16117-06-1	Uranium-235	SOIL	LA-508-481	U	0.278	pCi/g	1.00	1.2			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	U-235 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.24	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	13603-48-3	Zinc-65	SOIL	LA-508-481	U	0.123	pCi/g	1.00	0.31			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Zn-65 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.18	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	14331-83-0	Actinium-228	SOIL	LA-508-481	U	0.586	pCi/g	1.00	0.88			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Ac-228 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.42	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	14813-48-8	Bismuth-212	SOIL	LA-508-481	U	0.776	pCi/g	1.00	1.2			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Bi-212 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.72	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	14733-03-0	Bismuth-214	SOIL	LA-508-481	U	0.810	pCi/g	1.00	0.30			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Bi-214 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.37	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	15082-94-1	Lead-212	SOIL	LA-508-481	U	0.727	pCi/g	1.00	0.27			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	E,7,C	Pb-212 Rel. Count Error (GEA)	SOIL	LA-508-481		+- 0.26	pCi/g	1.00	0.0			03/16/05 03/16/05 03/16/05
W050001000	81CF81	TRENT	15087-28-4	Lead-214	SOIL	LA-508-481	U	1.08	pCi/g	1.00	0.32			03/16/05 03/16/05 03/16/05

MDL = Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.

RQ = Result Qualifier

DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

Report WCP/Ver. 1.1

Groundwater Remediation Program

WSCF ANALYTICAL RESULTS REPORT

Attention:		Steve Trent		Group #:		WSCF20050590					
Project:		F05-009; F05-009									
Sample #	Client ID	CAS #	Test Performed	Matrix	Method	RQ	Result	Unit	DF	MDL	Analyze Sample Receive
W050001000	81CF61	TRMT	Pb-214 Rel. Count Error (GEA)	SOIL	LA-508-481		++	0.45	1.00	0.0	02/18/05 02/18/05 02/18/05
W050001000	81CF61	TRMT	Ruthenium-103	SOIL	LA-508-481	U		-0.0784	1.00	0.14	02/18/05 02/18/05 02/18/05
W050001000	81CF61	TRMT	Rp-103 Rel. Count Error (GEA)	SOIL	LA-508-481		++	0.085	1.00	0.0	02/18/05 02/18/05 02/18/05
W050001000	81CF61	TRMT	Ti-113	SOIL	LA-508-481	U		0.118	1.00	0.19	02/18/05 02/18/05 02/18/05
W050001000	81CF61	TRMT	Sn-113 Rel. Count Error (GEA)	SOIL	LA-508-481		++	0.11	1.00	0.0	02/18/05 02/18/05 02/18/05
W050001000	81CF61	TRMT	Thallium-208	SOIL	LA-508-481			-0.315	1.00	0.15	02/18/05 02/18/05 02/18/05
W050001000	81CF61	TRMT	Tl-208 Rel. Count Error (GEA)	SOIL	LA-508-481		++	0.13	1.00	0.0	02/18/05 02/18/05 02/18/05

MDL = Minimum Detection Limit U - Analyzed for but not detected above limiting criteria.

RQ = Result Qualifier

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+ - Indicates results that have NOT been validated: + - Indicates more than six qualifier symbols

Report WCP/ver. 1.1

Groundwater Remediation Program



STL

Sample Check-in List

- Date/Time Received: 3-22-0830
- Client: FLH SDG #: W04597 NA ☐ SAF #: F05-009 NA ☐
- Work Order Number: 50220162 Chain of Custody #: F05-009-088
- Shipping Container ID: GRP-05-003 Air Bill #: UNA
1. Custody Seals on shipping container intact? NA ☐ Yes ☒ No ☐
 2. Custody Seals dated and signed? NA ☐ Yes ☐ No ☒
 3. Chain of Custody record present? Yes ☒ No ☐
 4. Cooler temperature: _____ NA ☒ 5. Vermiculite/packing materials is NA ☒ Wet ☐ Dry ☐
 6. Number of samples in shipping container: 1
 7. Sample holding times exceeded? NA ☐ Yes ☐ No ☒
 8. Samples have:
☒ tape ☒ hazard labels
☒ custody seals ☒ appropriate sample labels
 9. Samples are:
☒ in good condition _____ leaking
_____ broken _____ have air bubbles
(Only for samples requiring head space)
 10. Sample pH taken? NA ☒ pH<2 ☐ pH>2 ☐ pH>9 ☐
 11. Sample Location, Sample Collector Listed? * Yes ☐ No ☒
*For documentation only. No corrective action needed.
 12. Were any anomalies identified in sample receipt? Yes ☐ No ☒
 13. Description of anomalies (include sample numbers): _____

Sample Custodian: Hinderberg Date: 3-22-05

Client Sample ID	Analysis Requested	Condition	Comments/Action

Client Informed on _____ by _____ Person contacted _____

☐ No action necessary; process as is.

Project Manager _____ Date _____

LS-023, 9/03, Rev. 5

4/4/2005 3:39:26 PM

Sample Preparation/Analysis

Balance Id:1120373922

108302, FLUOR HANFORD IC
Hanford Inc

, Flour

7S Uiso PrPRC5013/RO5019, SepRC5079(5039)
SR Uranium-234,235,238 by Alpha Spec

Pipet #:

Report Due: 04/01/2005

SI CLIENT: HANFORD

Sep1 DT/Tm Tech:

Batch: 5087401

SOIL





pCi/g

PM, Quote: BG2, 50639

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech: HansenM

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
1 G6PQG-1-AA J5C220162-1-SAMP 	2.00g,in		UUTC12656 02/07/05.pd 10/12/04.r	200				
03/15/2005 10:15	AmtRec: 60G	#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g Beta: 1.99E+02 pCi/g	
2 G6PQG-1-AD-X J5C220162-1-DUP 	2.04g,in		UUTC12657 02/07/05.pd 10/12/04.r					
03/15/2005 10:15	AmtRec: 60G	#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g Beta: 1.99E+02 pCi/g	
3 G66QK-1-AA-B J5C280000-401-BLK 	2.00g,in		UUTC12658 02/07/05.pd 10/12/04.r					
03/15/2005 10:15	AmtRec:	#Containers: 1					Scr Rst: Alpha: Beta:	
4 G66QK-1-AC-C J5C280000-401-LCS 	2.00g,in		UISH0352 02/10/05.pd 07/23/04.r					
03/15/2005 10:15	AmtRec:	#Containers: 1					Scr Rst: Alpha: Beta:	

Comments: Samples have crashed. 4-6-05

All Clients for Batch:

108302, FLUOR HANFORD IC

, Flour Hanford Inc

, BG2, 50639

G6PQG1AA-SAMP Constituent List:

U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:
G66QK1AA-BLK:											
U-232	RDL:	pCi/g	LCL:20	UCL:105	RPD:35	U-234	RDL:1	pCi/g	LCL:	UCL:	RPD:
U-235	RDL:1	pCi/g	LCL:	UCL:	RPD:	U-238	RDL:1	pCi/g	LCL:	UCL:	RPD:

STL Richland

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2
Richland Wa. pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktalled Added

Page 1

ISV - Insufficient Volume for Analysis

WO Cnt: 4

Prep_SamplePrep v4.8.08

4/8/2005 4:45:02 PM

ICOC Fraction Transfer/Status Report

ByDate: 4/8/2004, 4/13/2005, Batch: '5087401', User: 'ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
5087401				
AC		Rev1C	WhitneyT	3/31/2005 11:32:12
SC			wagarr	IsBatched 3/28/2005 12:51:31 PM
SC			WhitneyT	InPrep 3/31/2005 11:32:12 AM
SC			WhitneyT	Prep1C 3/31/2005 1:57:06 PM
SC			HansenM	InPrep2 4/4/2005 3:44:59 PM
SC			WAGNERJ	Prep2C 4/6/2005 9:15:02 AM
SC			FinchA	InSep1 4/6/2005 8:50:05 PM
SC			FinchA	Sep1C 4/6/2005 8:52:10 PM
SC			BarbosaH	InSep2 4/7/2005 8:34:03 AM
SC			BarbosaH	Sep2C 4/7/2005 3:29:42 PM
SC			DAWKINSO	InCnt1 4/7/2005 7:02:06 PM
SC			AndersonP	Rev1C 4/8/2005 4:44:24 PM
AC			WhitneyT	3/31/2005 1:57:06 PM
AC			HansenM	4/4/2005 3:44:59 PM
AC			WAGNERJ	4/6/2005 9:15:02 AM
AC			FinchA	4/6/2005 8:50:05 PM
AC			FinchA	4/6/2005 8:52:10 PM
AC			BarbosaH	4/7/2005 8:34:03 AM
AC			BarbosaH	4/7/2005 3:29:42 PM
AC			DAWKINSO	4/7/2005 7:02:06 PM
AC			AndersonP	4/8/2005 4:44:24 PM

ICOC_RADCALC v4.8.08
 RICH-RC-5013 REVISION 5
 RICH-RC-5013 REVISION 5
 RICH-RC-5032 REVISION 2
 RICH-RC-5032 REVISION 2
 RICH-RC-5067 REVISION 6
 RICH-RC-5067 REVISION 6
 RICHRC5039 REV4
 RICHRC5039 REV4
 RICH-RD-0008 REVISION 3
 RICH-RC-0002 REVISION 6

jwDone

AC: Accepting Entry; SC: Status Change

STL Richland
 Richland Wa.

Page 1

Grp Rec Cnt: 10
 ICOCFractions v4.8.09

Sample Preparation/Analysis									
4/13/2005 12:41:09 PM		Balance Id:		Pipet #:					
108302, FLUOR HANFORD IC		Flour		AN Tc-99 Prp/SepRC50135078					
Hanford Inc				S5 Technetium-99 by Liquid Scint					
Report Due: 04/01/2005		SOIL		SI CLIENT: HANFORD					
Batch: 5098650		pCi/g		PM, Quote: BG2, 50639					
SEQ Batch, Test: None									
Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Deflector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:	
1 GSPQG-1AG-S		2.00g.in	TCSG0985						
J5C220162-1-4MS			03/07/05.pd						
03/15/2005 10:15			02/15/05.L						
2 GSPQG-1AH-X		2.10g.in	#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g	Beta: 1.99E+02 pCi/g
J5C220162-1-DUP									
03/15/2005 10:15			#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g	Beta: 1.99E+02 pCi/g
3 GSPQG-2AC		2.10g.in							
J5C220162-1-SAMP									
03/15/2005 10:15			#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g	Beta: 1.99E+02 pCi/g
4 G73CQ-1AA-B		2.10g.in							
J5D080000-650-BLK									
03/15/2005 10:15			#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g	Beta: 1.99E+02 pCi/g
5 G73CQ-1AC-C		2.00g.in							
J5D080000-650-LCS			TCSG0986						
03/15/2005 10:15			03/07/05.pd						
02/15/05.L									
6 G73CQ-1AD-BN			#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g	Beta: 1.99E+02 pCi/g
J5D080000-650-BLK									
03/15/2005 10:15			#Containers: 1					Scr Rst: Alpha: 5.60E+02 pCi/g	Beta: 1.99E+02 pCi/g

4/8/2005 6:26:51 PM

Sample Preparation/Analysis

Balance Id:

AN To-99 Prp/SepRC5013/5078
 S5 Technetium-99 by Liquid Scint
 SI CLIENT: HANFORD

Pipet #:

Report Due: 04/01/2005

Sep1 DT/Tm Tech:

Batch: 5098650

pCi/g

Sep2 DT/Tm Tech:

SEQ Batch, Test: None

Prep Tech:

Work Order, Lot, Sample Date/Time	Total Amt/Unit	Initial Aliquot Amt/Unit	QC Tracer Prep Date	Count Time Min	Detector Id	Count On Off (24hr) Circle	CR Analyst, Init/Date	Comments:
--------------------------------------	-------------------	-----------------------------	------------------------	-------------------	----------------	---------------------------------	--------------------------	-----------

Comments:

All Clients for Batch:

108302, FLOOR HANFORD, IC

Flour Hanford Inc

, BG2, 50639

269QGLAG-MS Constituent List:

073CQ1AA-BLK:

To-99 RDL:15 pCi/g LCL: UCL: RPD:

073CQ1AC-LCS:

To-99 RDL:15 pCi/g LCL:70 UCL:130 RPD:35

073CQ1AD-IBLK:

To-99 RDL:15 pCi/g LCL: UCL: RPD:

269QGLAG-MS Calc Info:

Uncert Level (#s): 2 Decay to Std: Y Blk Subt.: N Sci.Mot.: Y ODRs: B

073CQ1AA-BLK:

Uncert Level (#s): 2 Decay to Std: Y Blk Subt.: N Sci.Mot.: Y ODRs: B

073CQ1AC-LCS:

Uncert Level (#s): 2 Decay to Std: Y Blk Subt.: N Sci.Mot.: Y ODRs: B

073CQ1AD-IBLK:

Uncert Level (#s): 2 Decay to Std: Y Blk Subt.: N Sci.Mot.: Y ODRs: B

Approved By

Date:

STL Richland

Key: In - Initial Amt, fi - Final Amt, di - Diluted Amt, s1 - Sep1, s2 - Sep2 Page 2

ISV - Insufficient Volume for Analysis

WO Cnt: 6

Richland Wa.

pd - Prep Dt, r - Reference Dt, ec-Enrichment Cell, ct-Cocktailed Added

ICOC v4.8.08

4/18/2005 12:14:52 PM

ICOC Fraction Transfer/Status Report

ByDate: 4/18/2004, 4/23/2005, Batch: '5098650', User: 'ALL Order By DateTimeAccepting

Q Batch	Work Ord	CurStatus	Accepting	Comments
5098650				
AC	CalcC	FinchA	4/13/2005 9:32:24	
SC		andersonp	IsBatched 4/8/2005 8:26:49 PM	ICOC_RADCALC v4.8.08
SC		FinchA	InSep1 4/13/2005 9:32:24 AM	RICH-RC-5078 REVISION 2
SC		FinchA	InPrep 4/13/2005 12:39:16 PM	RICH-RC-5078 Revision 2
SC		FinchA	Sep1C 4/15/2005 4:48:06 PM	RICH-RC-5078 REVISION 2
SC		DAWKINSO	InCnt1 4/15/2005 4:55:36 PM	RICH-RD-0001 REVISION 3
SC		StringerR	CalcC 4/17/2005 12:17:47 PM	RICH-RD-0001 REVISION 3
AC		FinchA	4/13/2005 12:39:16	
AC		FinchA	4/15/2005 4:48:06 PM	
AC		DAWKINSO	4/15/2005 4:55:36 PM	
AC		StringerR	4/17/2005 12:17:47	

AC: Accepting Entry; SC: Status Change

STL Richland
Richland Wa.

Page 1

Grp Rec Cnt: 5
ICOCFractions v4.8.09



STL

STL St. Louis
13715 Rider Trail North
Earth City, MO 63045

Tel: 314 298 8566 Fax: 314 298 8757
www.stl-inc.com

ANALYTICAL REPORT

PROJECT NO. 216-U-1/216-U-2

F05-009

Lot #: F5C230304
SDG #: W04597

Steve Trent

Fluor Hanford Inc
825 Jadwin Ave.
Richland, WA 99352



SEVERN TRENT LABORATORIES, INC.

MARTI WARD
Project Manager

March 29, 2005

SAMPLE SUMMARY**F5C230304**

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT SAMPLE ID</u>	<u>SAMPLED DATE</u>	<u>SAMP TIME</u>
G6VCA	001	B1CP85	03/15/05	10:15

NOTE(S) :

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

METHODS SUMMARY

F5C230304

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Nitrate-Nitrite	MCAWW 353.1	
Percent Moisture	MCAWW 160.3 MOD	MCAWW 160.3 MOD

References:

MCAWW "Methods for Chemical Analysis of Water and Wastes",
EPA-600/4-79-020, March 1983 and subsequent revisions.

CUR 5598

STL ST. LOUIS

LOT # F5C230304

Fluor-Hamford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST				F05-009-099		PAGE 1 OF 1	
COLLECTOR POPE/PFISTER/MOKLER/TYRA / NUGLIES		COMPANY CONTACT JACKSON, RL		TELEPHONE NO. 372-9004		PROJECT COORDINATOR TRENT, SJ		PRICE CODE 88	
SAMPLING LOCATION C4716 216-U-8 14722-444-40 ft		PROJECT DESIGNATION U Plant Closure Contaminant Plume Refinement				SAF NO. F05-009		DATA TURNAROUND 7 Days / 15 Days	
ICE CHEST NO. GRP-05-01547-51		FIELD LOGBOOK NO. HNF-N-4391		COA 119141ES10		METHOD OF SHIPMENT GOVERNMENT VEHICLE Fed Ex 1 MAR 3/22/05			
SHIPPED TO Severn Trent St. Louis		OFFSITE PROPERTY NO. WA-1 SUP PTK 15115				BILL OF LADING/AIR BILL NO. WA-1 SUP PTK 15115			
MATRIX* A=Air DL=Drum Liquids DS=Drum Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WT=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS Rad to BICF61		PRESERVATION None						
			TYPE OF CONTAINER 4G						
			NO. OF CONTAINER(S) 1						
			VOLUME 60mL						
SPECIAL HANDLING AND/OR STORAGE W04597		SAMPLE ANALYSIS		SEE ITEM (1) IN SPECIAL INSTRUCTIONS					
SAMPLE NO.		MATRIX*		SAMPLE DATE		SAMPLE TIME			
B1CF85		SOIL		3-15-05		1015		X	
CHAIN OF POSSESSION				SIGN/ PRINT NAMES				SPECIAL INSTRUCTIONS	
RELINQUISHED BY/REMOVED FROM JSP/12/1/05 3-15-05		DATE/TIME 1700		RECEIVED BY/STORED IN M.B. BRUNN 3-15-05		DATE/TIME 1700		** The STL laboratories will dose SDGs upon accumulation of 5 samples or at a minimum weekly. (1) ICP Metals - 6010B (Supertrace) (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver), ICP Metals - 6010B (Supertrace Add-On) (Antimony, Cobalt, Copper, Magnesium, Manganese, Nickel, Strontium, Thallium, Titanium, Vanadium, Zinc) Mercury - 7470 (GC); NO2/NO3 - 353.1;	
RELINQUISHED BY/REMOVED FROM M.B. BRUNN 3-22-05		DATE/TIME 0800		RECEIVED BY/STORED IN Fed Ex		DATE/TIME 3-22-05			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
RELINQUISHED BY/REMOVED FROM		DATE/TIME		RECEIVED BY/STORED IN		DATE/TIME			
LABORATORY SECTION		RECEIVED BY Jill Clarke 3.23-05 0930				TITLE		DATE/TIME	
FINAL SAMPLE DISPOSITION		DISPOSAL METHOD				DISPOSED BY		DATE/TIME	

SEVERN
TRENT

STL

Lot No: F5C230304
W04597Condition Upon Receipt Form
St. Louis LaboratoryClient: RichlandDate: 3-23-05 Time: 0930Quote No: 63341Initiated by: AKShipper/No: FedEx #101437834COC/RFA Numbers: F05-009-099

Condition/Variance (Circle "Y" for yes, "N" for no and "N/A" for not applicable):

1. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in undamaged condition?	7. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample received with Chain of Custody?
2. <input type="radio"/> Y <input checked="" type="radio"/> N	Sample received within $4^{\circ}\text{C} \pm 2^{\circ}\text{C}$?	8. <input checked="" type="radio"/> Y <input type="radio"/> N	Chain of Custody matches sample IDs on containers?
	Record <u>Ambient</u>	9. <input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal received intact on cooler?
3. <input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> N/A	Sample received with proper pH?	10. <input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal tamper evident on cooler?
4. <input type="radio"/> Y <input type="radio"/> N	If N/A - Was pH taken by original STL lab?	11. <input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal on bottles received intact?
5. <input checked="" type="radio"/> Y <input type="radio"/> N	Sample received in proper containers?	12. <input checked="" type="radio"/> Y <input type="radio"/> N <input type="radio"/> N/A	Custody seal tamper evident on bottles?
6. <input type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> ?	Sample volume sufficient for analysis?	13. <input type="radio"/> Y <input type="radio"/> N	Was CUR (equivalent) rec'd from original STL lab?

* Temperature Variance Does Not Affect the Following Analyses: _____

For DOE-AL (Pantex, LANL, Sandia) sites, verify pH all containers received, except for VOA, TOX, and soils.

Notes:

Corrective Action:

- ☐ Client's Name: _____ Informed by: _____ By: _____
- ☐ Sample(s) processed "as is". _____
- ☐ Sample(s) on hold until: _____ If released, notify: _____

Project Management Review: MurkinDate: 3-23-05

THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY THEIR
INITIALS AND THE DATE NEXT TO THAT ITEM

5598

ADMIN-0004, Revised 2/17/04
\\slvr01\QA\FORMS\ST-LOUIS\ADMIN\Admin004 rev7.doc

LOT # F5C230304

W04597

5 of 10

STL ST. LOUIS

FLUOR HANFORD IC

Client Sample ID: B1CF85

General Chemistry

Lot-Sample #....: F5C230304-001 Work Order #....: G6VCA Matrix.....: SOLID
Date Sampled....: 03/15/05 Date Received...: 03/23/05
% Moisture.....: 2.2

PARAMETER	RESULT	RL	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N	8.0	0.50	mg/kg	MCANW 353.1	03/23/05	5083052
		Dilution Factor: 1		MDL.....: 0.027		
Percent Moisture	2.2	0.10	%	MCANW 160.3 MOD	03/25/05	5085075
		Dilution Factor: 1		MDL.....:		

STL ST. LOUIS

SAMPLE DUPLICATE EVALUATION REPORT

General Chemistry

Client Lot #....: F5C230304

Work Order #....: G6VCA-SMP
G6VCA-DUP

Matrix.....: SOLID

Date Sampled....: 03/15/05

Date Received...: 03/23/05

% Moisture.....: 2.2

<u>PARAM</u>	<u>RESULT</u>	<u>DUPLICATE</u> <u>RESULT</u>	<u>UNITS</u>	<u>RPD</u>	<u>RPD</u> <u>LIMIT</u>	<u>METHOD</u>	<u>PREPARATION-</u> <u>ANALYSIS DATE</u>	<u>PREP</u> <u>BATCH #</u>
Nitrate/Nitrite as N						SD Lot-Sample #: F5C230304-001		
	8.0	7.7	mg/kg	4.6	(0-30)	MCAWW 353.1	03/23/05	5083052
			Dilution Factor: 1					
Percent Moisture						SD Lot-Sample #: F5C230304-001		
	2.2	2.1	%	4.7	(0-30)	MCAWW 160.3 MOD	03/25/05	5085075
			Dilution Factor: 1					

STL ST. LOUIS

MATRIX SPIKE SAMPLE DATA REPORT

General Chemistry

Client Lot #...: F5C230304

Matrix.....: SOLID

Date Sampled...: 03/15/05

Date Received...: 03/23/05

Percent Moisture: 0.0

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASURED AMOUNT	UNITS	PERCENT RECOVERY	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N	8.0	20.0	28.7	mg/kg	103	MCAWN 353.1	03/23/05	5083052

Work Order #...: G6VCA1AE MS Lot-Sample #: F5C230304-001
Dilution Factor: 4

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

STL ST. LOUIS

METHOD BLANK REPORT

General Chemistry

Client Lot #...: F5C230304

Matrix.....: SOLID

PARAMETER	RESULT	REPORTING LIMIT	UNITS	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N	N	Work Order #: G60KN1AA		MB Lot-Sample #:	F5C240000-052	
	ND	0.50	mg/kg	MCAWW 353.1	03/23/05	5083052
		Dilution Factor: 1				

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.

STL ST. LOUIS

LABORATORY CONTROL SAMPLE DATA REPORT

General Chemistry

Lot-Sample #...: F5C230304

Matrix.....: SOLID

PARAMETER	SPIKE AMOUNT	MEASURED AMOUNT	UNITS	PERCENT RECVRY	RPD	METHOD	PREPARATION- ANALYSIS DATE	PREP BATCH #
Nitrate/Nitrite as N								
	4.00	3.78	mg/kg	94		MCAWW 353.1	03/23/05	5083052
	4.00	3.85	mg/kg	96	1.8	MCAWW 353.1	03/23/05	5083052

Dilution Factor: 1

NOTE(S):

Calculations are performed before rounding to avoid round-off errors in calculated results.